



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,597	04/13/2006	Thierry Aubert	FR-AM 1982 NP	1566
31684 7590 09/21/2010				
ARKEMA INC. PATENT DEPARTMENT - 26TH FLOOR 2000 MARKET STREET PHILADELPHIA, PA 19103-3222				
EXAMINER				
BOYLE, ROBERT C				
ART UNIT		PAPER NUMBER		
1796				
NOTIFICATION DATE		DELIVERY MODE		
09/21/2010		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

carol.hill@arkema.com  
steven.boyd@arkema.com  
thomas.roland@arkema.com

# Office Action Summary

**Application No.**

10/575,597

**Applicant(s)**

AUBERT, THIERRY

**Examiner**

ROBERT C. BOYLE

**Art Unit**

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 May 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 4-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 4-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/22)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date: \_\_\_\_\_

**DETAILED ACTION**

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(c) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/17/2010 has been entered.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 103***

3. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ecsedy** (US 3,968,062).
4. The rejection is adequately set forth in paragraphs 6-16 in the office action mailed on December, 17, 2009 and is incorporated here by reference. It is noted that the limitations currently amended into claim 1 were originally presented in claims 2 and 3, and addressed as such in the office action mailed on December, 17, 2009.
5. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ecsedy** (US 3,968,062) in view of **Rowland** (US 5,326,828).
6. The rejection is adequately set forth in paragraphs 17-22 in the office action mailed on December, 17, 2009 and is incorporated here by reference. It is noted that the limitations

currently amended into claim 1 were originally presented in claims 2 and 3, and addressed as such in the office action mailed on December, 17, 2009.

7. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ecsedy** (US 3,968,062) in view of **Coran** (US 5,096,978).

8. As to claims 1, 4, Ecsedy teaches using the polysulfide of formula I (column 1, lines 7-9, 40-55) in the presence of a co-vulcanizing agent (column 4, lines 6-13). Ecsedy teaches adding the two in amounts of 1.08 of the sulfide and 0.75 of the co-agent (column 6, lines 58-59). Ecsedy does not teach using the urea of formula II.

9. Coran teaches using urea coactivators (abstract) such as 1,3-dimethylurea and 1,3-diethylurea (col. 3, ln. 10-68) in the vulcanization of EPDM polymers (col. 2, ln. 15-31). It would have been obvious to use the coactivators of Coran with the polysulfides of Ecsedy because the use of urea coactivators results in improved cure rates with very little increase in scorch rate and modulus (col. 1, ln. 31-50).

10. As to claims 5-6, Ecsedy teaches R is a t-Bu group, disulfide linkages are preferred and the repeating units can be 0, 1, 2, or a higher integer (column 1, lines 48-67).

11. As to claim 7, Ecsedy discloses disulfides with 27% sulfur (column 3, lines 63-64). The disulfides with R as t-butyl and with a p of 5 give 26.7% sulfur and disulfides with a p of 6 give 27.1% sulfur. Therefore, the disulfides used by Ecsedy had an average p value of about 5.

12. As to claim 8, Ecsedy teaches using an effective quantity of the aryl disulfides and a urea co-agent to vulcanize polymers (column 1, lines 7-9, 40-55, column 4, lines 6-13; column 6, lines 5-25). Ecsedy also teaches vulcanization of copolymers of butadiene and other

polymerizable olefins (column 1, lines 18-35). Coran teaches using urea coactivators (abstract) such as 1,3-dimethylurea and 1,3-diethylurea (col. 3, ln. 10-68) in the vulcanization of EPDM polymers (col. 2, ln. 15-31).

13. Claim 8 states a property of the vulcanization agent disclosed in claim 1: presenting no risk relative to formation of nitrosamines. Ecsedy and Coran do not elaborate on this property. However, since the same vulcanization agent that is disclosed in claim 1 is taught in Ecsedy and Coran, one of ordinary skill in the art would expect that the vulcanization agent of Ecsedy and Coran would have the same properties as the vulcanization agent disclosed in claim 1.

14. As to claims 10-11, Ecsedy teaches 2 parts by weight agent: 0.25 TMTMS, 0.5 disulfide, and 1.25 MBTS, per 100 parts by weight elastomer: 65 enjay butyl, 25 natural rubber, and 20 whole tire reclaim (column 6, lines 5-25).

### ***Response to Arguments***

15. Applicant's arguments filed 5/7/2010 have been fully considered but they are not persuasive.

16. Applicant argues that Ecsedy '062 does not recognize the accelerating effect of urea on the polysulfide vulcanization agents. However, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Thus, even though Ecsedy '062 might not teach the accelerating effect, Ecsedy '062 teaches the claimed composition, and thus falls within the scope of the instant claims.

17. Applicant argues that the accelerating effects amount to an unexpected result and directs attention to the examples in the instant specification as evidence.

18. However, only two comparative examples are present, example 3 uses product (I) alone, and example 4 uses formula (II) alone. This does not amount to unexpected results because Applicant has merely shown that the addition of a cure accelerator, urea, to a curing agent, product (I), results in an increased speed. However, Ecsedy '062 teaches cure accelerators can be used (col. 4, ln. 6-13) and it would be obvious that a cure accelerator would increase the speed of the reaction because 'accelerate' means to increase the speed.

19. Furthermore, it is noted that MPEP 716.02 requires the claimed invention be compared with the prior art to show unexpected results. The prior art, Ecsedy '062, teaches using cure accelerators with the claimed vulcanization agents. The comparative data presented in the instant specification does not reflect the teachings of Ecsedy '062.

20. As the evidence provided in the specification does not amount to unexpected results, applicant's argument is not persuasive.

21. Applicant argues that Ecsedy '062 does not provide motivation to substitute the sulfur in the thioureas taught with an oxygen to arrive at the claimed urea. This is not persuasive.

22. MPEP 2141 and 2143 state that exemplary rationales that may support a conclusion of obviousness include:

- (A) Combining prior art elements according to known methods to yield predictable results;
- (B) Simple substitution of one known element for another to obtain predictable results;

Art Unit: 1796

- (C) Use of known technique to improve similar devices (methods, or products) in the same way;
- (D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- (E) “Obvious to try” – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
- (F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;
- (G) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. See MPEP § 214.3 for a discussion of the rationales listed above along with examples illustrating how the cited rationales may be used to support a finding of obviousness.

23. Rationale (B) applies in this situation. Ecsedy '062 does teach a co-agent of diethylthiourea (column 4, lines 6-13). The simple substitution of oxygen for sulfur would result in predictable result because oxygen is a well known substitute for sulfur and using either a sulfur or an oxygen results in a compound with carbon atom having a severe electron deficiency due to the adjacent heteroatoms and open electron lone pairs on the heteroatoms.

24. Thus, even though Ecsedy '062 does not teach urea compounds, this does not preclude a finding of obviousness.

25. Applicant argues that Rowland teaches three critical components, and thus it would not be obvious to combine the polysulfides of Ecsedy with the ureas of Rowland. This is not persuasive.

26. The instant claim language uses the transitional phrase “comprising”. Thus, the critical components taught in Rowland are not excluded from the claimed invention and can be combined with Ecsedy.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT C. BOYLE whose telephone number is (571)270-7347. The examiner can normally be reached on Monday-Thursday, 9:00AM-5:00PM Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571)272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Robert C. Boyle/  
Examiner, Art Unit 1796

/Vasu Jagannathan/  
Supervisory Patent Examiner, Art Unit 1796